REMARKS/ARGUMENTS

Reconsideration of this application is requested. Claims 21, 23 and 25-44 are in the case.

I. THE 35 U.S.C. §112, SECOND PARAGRAPH, REJECTION

Claims 24, 27, 28, 31, 33, 34, 37 stand rejected under 35 U.S.C. §112, second paragraph, as allegedly indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 24, the meaning of "compression is non-reversible" is allegedly not clear, and the Action suggests that the word "compression" be changed to "deformation". In response, page 7 of the application defines this by stating that "preferably, said compression is non-reversible i.e. it is important that after removal of the compression inducing force the feeder element does not revert to its original shape". Withdrawal of this aspect of the formal rejection is requested.

Claim 27 has been rejected as lacking antecedent faces for "said ring". In response, claim 27 has been amended so that it is dependent on claim 26 instead of Claim 21.

Claim 28 has been rejected as unclear, but it is not understood where this lack of clarity appears. Claim 28 is dependent on claim 26 and requires the rings to be planar. Planar has the normal dictionary meaning of flat or level and several such feeder elements are described in the application. For example, see Figures 1, 7 and 9. Figure 11 is an example of a feeder element where the rings are not planar and are instead

inclined to the bore axis i.e. frustoconical. Withdrawal of this aspect of the formal rejection is requested.

Claim 31 is rejected on the ground that it refers to the angle defined between the bore axis and the first side wall regions and queries what angle is referred to. This angle is shown as α in Figures 7, 9 and 11. The description accompanying Figure 11 states "the first series of sidewall regions 54 are inclined by about 45° to the bore axis (i.e. frustoconical), so that they are outwardly flared relative to the base 56 of the breaker core 50" (see page 17). It is clear from this discussion hat angle is intended. Withdrawal of this aspect of the formal rejection is requested.

Claim 33 is rejected in that it refers to "the inner and outer diameters of the first side wall regions". This is explained on page 9 of the application and refers to the inner and outer diameters of the rings which constitute the first sidewall as described in claim 26. Withdrawal of this aspect of the formal rejection is requested.

Claim 34 is rejected in that it refers to "an inwardly directed angular flange or bead". In response, "bead" has been removed from claim 34. The angular flange is described in relation to Figure 7A.

Claim 37 has been rejected in that it refers to "one or more kinks, bends, corrugations or other contours". In response, the phrase "other contours" has been deleted from this claim.

II. THE ANTICIPATION REJECTIONS

Claims 21, 24-31, 34, 39 stand rejected under 35 U.S.C. §102(a) as allegedly anticipated by DE 20 2004 009 367. The Action advised that this rejection can be

overcome by submitting the priority document (i.e. UK 0325134.5) to the Office. That document is attached, which supports the invention as claimed. Withdrawal of the rejection is respectfully requested.

Claims 21, 24, 25, and 39 stand rejected under 35 U.S.C. §102(b)/(e) as allegedly anticipated by either DE 201 12 425 (D'425) or US 2004/0050526 (US'526). The rejections are respectfully traversed.

With regard to DE'425, the Action advises that the hat-shaped metallic annulus 22 in DE '425 is compressible, a non-brittle material and the deformation can be non-reversible when it is deformed beyond the elastic range. In response, claim 21 is directed to a feeder element for use in metal casting. The feeder element has a first end for mounting on a mold pattern, an opposite second end for receiving a feeder sleeve, and a bore between the first and second ends defined by a sidewall. The feeder element is compressible whereby in use to reduce the distance between the first and second ends.

Claim 21 requires the feeder element to be "compressible in use whereby to reduce the distance between said first and second ends". In DE'425, the feeder element does not meet this requirement, because the force required to compress it is greatly in excess of those pressures used to prepare a mold for a casting. This is acknowledged in DE'425 since page 4 of the English translation of DE'425 (previously provided) states:

> "The hat-shaped form of the annulus provides an additional advantage with its stiffening effect, so that the annulus offers adequate stability with respect to the stress occurring when moulding the feeder insert".

There is no disclosure in DE'425 that the breaker will be compressible in use. It is clearly intended to withstand the pressure of molding rather than compressing under it. Since the feeder element is designed for use with a feeder sleeve, damage would inevitably occur to the feeder sleeve before the DE'425 feeder element would compress.

The Action appears to assume that, if sufficient force is applied, compression will occur. Although this might be true, it should be noted that the expression "in use" implicitly requires the feeder element to function in the proposed application.

While it is believed that the term "compressible in use" distinguishes the present application over DE'425, claim 21 has been amended to incorporate the subject matter of claims 22 and 24, i.e. that the compression is non-reversible and that the initial crush strength is no more than 5000 N, to expedite prosecution. Such an amendment further distinguishes the present invention the breaker core of DE'425.

In further support of the differences between the present invention and DE'425, Applicant has prepared replicas of the feeder element described in DE'425 and tested their compression properties. Feeder elements were prepared from steel sheet having a thickness of either 0.8mm or 1.0mm (based on observations of feeder elements available in the market). The feeder element test pieces were tested by placing them between two parallel plates of a Hounsfield Compression Strength Tester, the bottom plate was fixed and the top plate reversed downwards via a mechanical screw thread mechanism at a constant rate of 13mm per minute. Graphs of force supplied against plate displacement were plotted and are attached. Corresponding graphs for filter elements of the present application are shown in Figures 21 and 23 and described on pages 22 and 23 of the present application.

Referring to Figures 21 and 23 of the present application, the initial crush strength of the feeder element is labelled A and ranges from around 800 to 4000 N. This is seen as a peak on the graph, since as force is increased there is minimal compression (associated with the natural flexibility in its unused and uncrushed state) until a critical force is applied (the initial crush strength), after which compression proceeds rapidly under a lower loading. In contrast, the graphs for the DE'425 feeder element do not have a peak corresponding to the initial crush strength, even though a force of up to 10000 N was applied. This demonstrates that the initial crush strength for the DE'425 feeder element is greatly in excess of 10000 N.

Applicant is preparing a Rule 132 Declaration to present the attached information as evidence. The declaration will be submitted in the near future.

Referring to the anticipation rejection of claims 21, 24, 25 and 39 over the metallic tube (3) of US'526, the Action advises that the metallic tube 3 in US'526 is compressible, a non-brittle material and the deformation can be non-reversible when it is deformed beyond the elastic range. In response, US'526 describes a feeder system comprising a feeder head (1) and a tube (3). The tube is located between the feeder head and the mold cavity and, during the molding-on process and/or densification of the molding material (i.e. ramming up), the tubular body moves relative to either the feeder sleeve or the mould cavity, i.e. it telescopes. This is said to provide an optimally positioned breaking edge for easy and safe separation of the remaining feeder from the finished cast piece. There is no disclosure (or suggestion) in US'526 that the tubular body compresses during use. In fact, paragraph [0037] states:

> "Of course, the wall of the tube must be sufficiently stable so as not to be destroyed during the densification of the molding material, to such an extent that no feedable connection exists any longer between the mold cavity and the feeder. For that reason, the preferred wall thickness of the tubular body depends on the type of material used."

Based on this, it is believed that the metallic tube (3) would not be compressible in use and would have initial crush strength higher than 5000 N. Withdrawal of the anticipation rejections is respectfully requested.

III THE OBVIOUSNESS REJECTIONS

Claims 22, 23, 32, 33, 35-38 and 40 stand rejected under 35 U.S.C. §103(a) as being unpatentable over DE 202004009 367. Claims 22, 23, 26-38 stand rejected under 35 U.S.C. §103(a) as allegedly unpatentable over either DE 201 12425 or US 2004/0050526. The obviousness rejections are traversed in as much as the invention as now claimed in claim 21 incorporates the subject matter of claim 24 which is not rejected on obviousness grounds. One of ordinary skill would not have been motivated to arrive at the invention as now claimed based on the cited art. Absent any such motivation, it is clear that a *prima facie* case of obviousness does not exist. Withdrawal of the obviousness rejections is accordingly respectfully requested.

IV. FURTHER AMENDMENTS

Since claim 30 refers to the second series of sidewall regions being annular whereas claim 27 refers to the rings [first series] being planar, claim 30 has been

amended to read "parallel to bore axis". Basis appears at line 14 of page 8. No new matter is entered.

New dependent claims are presented fro consideration. Thus, new dependent claim 41 is directed to the feature where the feeder element is made from a metal selected from steel, aluminum, aluminum alloys and brass (support appears at page 7). New dependent claim 42 is directed to the feeder element made from steel (support appears on page 7). New dependent claim 43 is directed to the crush strength being at least 500 N and no more than 3000 N (support appears in claim 23 and at page 6). New dependent claim 44 is directed to the thickness of the sidewall regions being 0.4 to 1.5 mm (support appears at page 9). No new matter is entered.

Favorable action is awaited.

Respectfully submitted,

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Attachments: Priority document (UK 0325134.5); graphs of force supplied against plate displacement.